

**What is claimed is:**

1. A method for deploying refuge seed together with at least one variety of transgenic crop seed in a field comprising the steps of
  - a) blending a first transgenic crop seed comprising a first transgene with a refuge seed;
  - b) ensuring a uniform mixture of said first transgenic crop seed and said refuge seed is provided; and
  - c) planting said mixture in said field;wherein said mixture consists of from about 100% to about 50% first transgenic crop seed, and wherein said refuge seed is selected from the group consisting of a non-transgenic crop seed and a second transgenic crop seed comprising a second transgene that is different from the first transgene.
2. The method of claim 1 wherein said second transgene is selected from the group consisting of an insecticidal transgene, a fungicidal transgene, a herbicidal transgene, a nematocidal transgene, a bactericidal transgene, and an acaricidal transgene.
3. The method of claim 1 wherein said mixture further comprises a composition selected from the group consisting of
  - a) said first transgenic crop seed lacking a seed treatment; and
  - b) said first transgenic crop seed treated with a seed treatment.
4. The method of claim 2 wherein said mixture further comprises a composition selected from the group consisting of
  - a) said refuge seed lacking a seed treatment; and
  - b) said refuge seed treated with a seed treatment.
5. The method of claim 3 wherein said seed treatment comprises a pesticidal agent selected from the group consisting of insecticides, acaricides, nematocides, fungicides, bactericides, and herbicides.
6. The method of claim 4 wherein said seed treatment comprises a pesticidal agent selected from the group consisting of insecticides, acaricides, nematocides, fungicides, bactericides, and herbicides.

7. The method of claim 5 wherein said pesticidal agent is an insecticide selected from the group consisting of a recombinant acyl lipid hydrolase protein, a *Bacillus sphearicus* insecticidal protein, *Bacillus laterosporous* insecticidal protein, an insecticidal protein derived from a *Xenorhabdus* bacteria species, an insecticidal protein derived from a *Photorhabdus* bacteria species, a *Bacillus thuringiensis* insecticidal  $\delta$ -endotoxin protein or vegetative insecticidal protein (VIP), and an insecticidal sRNAi molecule.
8. The method of claim 5 wherein said pesticidal agent is selected from the group consisting of pyrethrins and synthetic pyrethroids, oxadizine derivatives, chloronicotinyls, nitroguanidine derivatives, triazoles, organophosphates, pyrrols, pyrazoles, phenyl pyrazoles, diacylhydrazines, biological/fermentation products, and carbamates.
9. The method of claim 5 wherein said pesticidal agent is
  - a) a pyrethrin selected from the group consisting of 2-allyl-4-hydroxy-3-methyl-2-cyclopenten-1-one ester of 2,2-dimethyl-3-(2methyl propenyl)-cyclopropane carboxylic acid, and/or (2-methyl-1-propenyl)-2-methoxy-4-oxo-3-(2 propenyl)-2-cyclopenten-1-yl ester and mixtures of cis and trans isomers thereof;
  - b) a synthetic pyrethroid selected from the group consisting of (s)-cyano(3-phenoxyphenyl)methyl 4-chloro alpha (1-methylethyl)benzeneacetate (fenvalerate), (S)-cyano (3-phenoxyphenyl) methyl (S)-4-chloro-alpha-(1-methylethyl) benzeneacetate (esfenvalerate), (3-phenoxyphenyl)-methyl(+)cis-trans-3-(2,2-dichloroethenyl)-2,2-dimethylcyclopropanecarboxylate (permethrin), ( $\pm$ ) alpha-cyano-(3-phenoxyphenyl) methyl(+)-cis,trans-3-(2,2-dichloroethenyl)-2,2-dimethyl-cyclopropane carboxylate (cypermethrin), beta-cypermethrin, theta cypermethrin, S-cyano (3-phenoxyphenyl) methyl ( $\pm$ ) cis/trans 3-(2,2-dichloroethenyl) 2,2 dimethylcyclopropane carboxylate (zeta-cypermethrin), (s)-alpha-cyano-3-phenoxybenzyl (IR,3R)-3-(2,2-dibromovinyl)-2,2-dimethyl cyclopropanecarboxylate (deltamethrin), alpha-cyano-3-phenoxybenzyl 2,2,3,3,-tetramethyl cyclopropoanecarboxylate (fenpropathrin), (RS)-alpha-cyano-3-phenoxybenzyl(R)-2-[2-chloro-4-(trifluoromethyl)anilino]-3-methylbutanoate (tau-fluvalinate), (2,3,5,6-tetrafluoro-4-methylphenyl)-methyl-(1 alpha, 3 alpha)-(Z)-( $\pm$ )-3-(2-chloro-3,3,3-trifluoro-1-propenyl)-2,2-dimethylcyclopropanecarboxylate (tefluthrin), ( $\pm$ )-cyano (3-phenoxyphenyl) methyl ( $\pm$ )-4-(difluoromethoxy)-alpha-(1-methyl ethyl) benzeneacetate (flucythrinate), cyano(4-fluoro-3-phenoxyphenyl)methyl 3-[2-chloro-2-

(4-chlorophenyl)ethenyl]-2,2-dimethylcyclopropanecarboxylate (flumethrin), cyano(4-fluoro-3-phenoxyphenyl) methyl 3-(2,2-dichloroethenyl)-2,2-dimethylcyclopropanecarboxylate (cyfluthrin), beta cyfluthrin, transfluthrin, (S)-alpha-cyano-3-phenoxybenzyl(Z)-(IR-cis)-2,2-dimethyl-3-[2-(2,2,2-trifluoro-trifluoromethyl-ethoxycarbonyl)vinyl]cyclopropane carboxylate (acrinathrin), (IR cis) S and (IS cis) R enantiomer isomer pair of alpha-cyano-3-phenoxybenzyl-3-(2,2-dichlorovinyl)-2,2-dimethylcyclopropane carboxylate (alpha-cypermethrin), [IR,3S]3(1'RS)(1',2',2',2'-tetrabromoethyl)]-2,2-dimethyl cyclopropanecarboxylic acid (s)-alpha-cyano-3-phenoxybenzyl ester (tralomethrin), cyano-(3-phenoxyphenyl) methyl 2,2-dichloro-1-(4-ethoxyphenyl)cyclopropane carboxylate (cycloprothrin), [1 $\alpha$ , 3 $\alpha$ (Z)]-( $\pm$ )-cyano-(3-phenoxyphenyl)methyl 3-(2-chloro-3,3,3-trifluoro-1-propenyl)-2,2-cimethylcyclopropanecarboxylate (cyhalothrin), [1 alpha (s), 3 alpha(z)]-cyano(3-phenoxyphenyl) methyl-3-(2-chloro-3,3,3-trifluoro-1-propenyl)-2,2-dimethylcyclopropane carboxylate (lambda cyhalothrin), (2-methyl [1,1'-biphenyl]-3-yl) methyl 3-(2-chloro-3,3,3-trifluoro-1-propenyl)-2,2-dimethyl-cyclopropanecarboxylate (bifenthrin), 5-1-benzyl-3-furylmethyl-d-cis(1R,3S,E)2,2-dimethyl-3-(2-oxo,-2,2,4,5 tetrahydro thiophenylidenemethyl)cyclopropane carboxylate (kadethrin), [5-(phenyl methyl)-3-furanyl]-3-furanyl 2,2-dimethyl-3-(2-methyl-1-propenyl) cyclopropane carboxylate (resmethrin). (1R-trans)-[5-(phenylmethyl)-3-furanyl]methyl 2,2-dimethyl-3-(2-methyl-1-propenyl)cyclopropanecarboxylate (bioresmethrin), 3,4,5,6-tetra hydro-phthalimidomethyl-(IRS)-cis-trans-chrysanthemate (tetramethrin), 3-phenoxybenzyl-d,l-cis,trans 2,2-dimethyl-3-(2-methylpropenyl) cyclopropane carboxylate (phenothrin), empenethrin, cyphenothrin, prallethrin, imiprothrin, (RS)-3-allyl-2-methyl-4-oxocyclopent-2-enyl-(1A,3R; 1R,3S)-2,2-dimethyl-3-(2-methylprop-1-enyl) cyclopropane carboxylate (allethrin), bioallethrin, and ZXI8901;

- c) an oxadiazine derivative selected from the group consisting of 5-(2-chloropyrid-5-ylmethyl)-3-methyl-4-nitroiminoperhydro-1,3,5-oxadiazine, 5-(2-chlorothiazol-5-ylmethyl)-3-methyl-4-nitroiminoperhydro-1,3,5-oxadiazine, 3-methyl-4-nitroimino-5-(1-oxido-3-pyridinomethyl) perhydro-1,3,5-oxadiazine, 5-(2-chloro-1-oxido-5-pyridiniomethyl)-3-methyl-4-nitroiminoperhydro-1,3,5-oxidiazine, 3-methyl-5-(2-methylpyrid-5-ylmethyl)-4-nitroiminoperhydro-1,3,5-oxadiazine, and thiamethoxam;
- d) a chloronicotiny insecticide selected from the group consisting of acetamiprid ((E)-N-[(6-chloro-3-pyridinyl)methyl]-N'-cyano-N-methyleneimidamide), imidacloprid (1-[(6-

chloro-3-pyridinyl)methyl]-N-nitro-2-imidazolidinimide), and nitenpyram (N-[(6-chloro-3-pyridinyl)methyl]-N-ethyl-N'-methyl-2-nitro-1,1-ethenediamine);

- e) a nitroguanidine insecticide selected from the group consisting of pyrroles: pyrazoles chlorfenapyr (4-bromo-2-(4-chlorophenyl)-1-ethoxymethyl-5-trifluoromethylpyrrole-3-carbonitrile), fenpyroximate ((E)-1,1-dimethylethyl-4[[[(1,3-dimethyl-5-phenoxy-1H-pyrazole-4-yl)methylene]amino]oxy]methyl]benzoate), and tebufenpyrad (4-chloro-N[[4-1,1-dimethylethyl]phenyl]methyl]-3-ethyl-1-methyl-1H-pyrazole-5-carboxamide);
- f) a phenyl pyrazole selected from the group consisting of fipronil (5-amino-[2,6-dichloro-4-(trifluoromethyl)phenyl]-4-[(1R,S)-(trifluoromethyl)sulfinyl]-1H-pyrazole-3-carbonitrile); diacylhydrazines including halofenozide (4-chlorobenzoate-2-benzoyl-2-(1,1-dimethylethyl)-hydrazide), methoxyfenozide (RH-2485, N-tert-butyl-N'-(3-methoxy-o-toluoyl)-3,5-xylohydrazide), and tebufenozide (3,5-dimethylbenzoic acid 1-(1,1-dimethylethyl)-2-(4-ethylbenzoyl) hydrazide);
- g) a triazole selected from the group consisting of amitrole and triazamate;
- h) a biological/fermentation products selected from the group consisting of avermectin (abamectin) and spinosad (XDE-105);
- i) an organophosphate insecticide selected from the group consisting of acephate, chlorpyrifos, chlorpyrifos-methyl, diazinon, fenamiphos, and malathion; and
- j) a carbamate insecticide selected from the group consisting of aldicarb, carbaryl, carbofuran, oxamyl, and thiodicarb.

10. The method of claim 6 wherein said pesticidal agent is an insecticide selected from the group consisting of a recombinant acyl lipid hydrolase protein, a *Bacillus sphearicus* insecticidal protein, *Bacillus laterosporous* insecticidal protein, an insecticidal protein derived from a *Xenorhabdus* bacteria species, an insecticidal protein derived from a *Photorhabdus* bacteria species, a *Bacillus thuringiensis* insecticidal  $\delta$ -endotoxin protein or vegetative insecticidal protein (VIP), and an insecticidal sRNAi molecule.

11. The method of claim 6 wherein said pesticidal agent is selected from the group consisting of pyrethrins and synthetic pyrethroids, oxadizine derivatives, chloronicotinyls, nitroguanidine derivatives, triazoles, organophosphates, pyrroles, pyrazoles, phenyl pyrazoles, diacylhydrazines, biological/fermentation products, and carbamates.

12. The method of claim 6 wherein said pesticidal agent is:

- a) a pyrethrin selected from the group consisting of 2-allyl-4-hydroxy-3-methyl-2-cyclopenten-1-one ester of 2,2-dimethyl-3-(2methyl propenyl)-cyclopropane carboxylic acid, and/or (2-methyl-1-propenyl)-2-methoxy-4-oxo-3-(2 propenyl)-2-cyclopenten-1-yl ester and mixtures of cis and trans isomers thereof;
- b) a synthetic pyrethroid selected from the group consisting of (s)-cyano(3-phenoxyphenyl)methyl 4-chloro alpha (1-methylethyl)benzeneacetate (fenvalerate), (S)-cyano (3-phenoxyphenyl) methyl (S)-4-chloro-alpha-(1-methylethyl) benzeneacetate (esfenvalerate), (3-phenoxyphenyl)-methyl(+)cis-trans-3-(2,2-dichloroethenyl)-2,2-dimethylcyclopropanecarboxylate (permethrin), (±) alpha-cyano-(3-phenoxyphenyl) methyl(+)cis,trans-3-(2,2-dichloroethenyl)-2,2-dimethyl-cyclopropane carboxylate (cypermethrin), beta-cypermethrin, theta cypermethrin, S-cyano (3-phenoxyphenyl) methyl (±) cis/trans 3-(2,2-dichloroethenyl) 2,2 dimethylcyclopropane carboxylate (zeta-cypermethrin), (s)-alpha-cyano-3-phenoxybenzyl (IR,3R)-3-(2,2-dibromovinyl)-2,2-dimethyl cyclopropanecarboxylate (deltamethrin), alpha-cyano-3-phenoxybenzyl 2,2,3,3,-tetramethyl cyclopropoanecarboxylate (fenpropathrin), (RS)-alpha-cyano-3-phenoxybenzyl(R)-2-[2-chloro-4-(trifluoromethyl)anilino]-3-methylbutanoate (tau-fluvalinate), (2,3,5,6-tetrafluoro-4-methylphenyl)-methyl-(1 alpha, 3 alpha)-(Z)-(±)-3-(2-chloro-3,3,3-trifluoro-1-propenyl)-2,2-dimethylcyclopropanecarboxylate (tefluthrin), (±)-cyano (3-phenoxyphenyl) methyl (±)-4-(difluoromethoxy)-alpha-(1-methyl ethyl) benzeneacetate (flucythrinate), cyano(4-fluoro-3-phenoxyphenyl)methyl 3-[2-chloro-2-(4-chlorophenyl)ethenyl]-2,2-dimethylcyclopropanecarboxylate (flumethrin), cyano(4-fluoro-3-phenoxyphenyl) methyl 3-(2,2-dichloroethenyl)-2,2-dimethyl-cyclopropanedacboxylate (cyfluthrin), beta cyfluthrin, transfluthrin, (S)-alpha-cyano-3-phenoxybenzyl(Z)-(IR-cis)-2,2-dimethyl-3-[2-(2,2,2-trifluoro-trifluoromethyl-ethoxycarbonyl)vinyl]cyclopropane carboxylate (acrinathrin), (IR cis) S and (IS cis) R enantiomer isomer pair of alpha-cyano-3-phenoxybenzyl-3-(2,2dichlorovinyl)-2,2-dimethylcyclopropane carboxylate (alpha-cypermethrin), [IR,3S)3(1'RS)(1',2',2',2'-tetrabromoethyl)]-2,2-dimethyl cyclopropanecarboxylic acid (s)-alpha-cyano-3-phenoxybenzyl ester (tralomethrin), cyano-(3-phenoxyphenyl) methyl 2,2-dichloro-1-(4-ethoxyphenyl)cyclopropane carboxylate (cycloprothrin), [1α, 3α(Z)]-(±)-cyano-(3-phenoxyphenyl)methyl 3-(2-chloro-3,3,3-trifluoro-1-propenyl)-2,2-cimethylcyclopropanecarboxylate (cyhalothrin), [1 alpha (s), 3 alpha(z)]-cyano(3-phenoxyphenyl) methyl-3-(2-chloro-3,3,3-trifluoro-1-propenyl)-2,2-dimethylcyclopropane carboxylate (lambda cyhalothrin), (2-methyl [1,1'-biphenyl]-3-yl)

- methyl 3-(2-chloro-3,3,3-trifluoro-1-propenyl)-2,2-dimethyl-cyclopropanecarboxylate (bifenthrin), 5-1-benzyl-3-furylmethyl-d-cis(1R,3S,E)2,2-dimethyl-3-(2-oxo,-2,2,4,5 tetrahydro thiophenylidenemethyl)cyclopropane carboxylate (kadethrin), [5-(phenyl methyl)-3-furanyl]-3-furanyl 2,2-dimethyl-3-(2-methyl-1-propenyl) cyclopropane carboxylate (resmethrin). (1R-trans)-[5-(phenylmethyl)-3-furanyl]methyl 2,2-dimethyl-3-(2-methyl-1-propenyl)cyclopropanecarboxylate (bioresmethrin), 3,4,5,6-tetra hydro-phthalimidomethyl-(IRS)-cis-trans-chrysanthemate (tetramethrin), 3-phenoxybenzyl-d,l-cis,trans 2,2-dimethyl-3-(2-methylpropenyl) cyclopropane carboxylate (phenothrin), empenthrin, cyphenothrin, prallethrin, imiprothrin, (RS)-3-allyl-2-methyl-4-oxocyclopent-2-enyl-(1A,3R; 1R,3S)-2,2-dimethyl-3-(2-methylprop-1-enyl) cyclopropane carboxylate (allethrin), bioallethrin, and ZXI8901;
- c) an oxadiazine derivative selected from the group consisting of 5-(2-chloropyrid-5-ylmethyl)-3-methyl-4-nitroiminoperhydro-1,3,5-oxadiazine, 5-(2-chlorothiazol-5-ylmethyl)-3-methyl-4-nitroiminoperhydro-1,3,5-oxadiazine, 3-methyl-4-nitroimino-5-(1-oxido-3-pyridinomethyl) perhydro-1,3,5-oxadiazine, 5-(2-chloro-1-oxido-5-pyridiniomethyl)-3-methyl-4-nitroiminoperhydro-1,3,5-oxidiazine, 3-methyl-5-(2-methylpyrid-5-ylmethyl)-4-nitroiminoperhydro-1,3,5-oxadiazine, and thiamethoxam;
- d) a chloronicotinyl insecticide selected from the group consisting of acetamiprid ((E)-N-[(6-chloro-3-pyridinyl)methyl]-N'-cyano-N-methyleneimidamide), imidacloprid (1-[(6-chloro-3-pyridinyl)methyl]-N-nitro-2-imidazolidinimide), and nitenpyram (N-[(6-chloro-3-pyridinyl)methyl]-N-ethyl-N'-methyl-2-nitro-1,1-ethenediamine);
- e) a nitroguanidine insecticide selected from the group consisting of pyrroles: pyrazoles chlorfenapyr (4-bromo-2-(4-chlorophenyl)-1-ethoxymethyl-5-trifluoromethylpyrrole-3-carbonitrile), fenpyroximate ((E)-1,1-dimethylethyl-4[[[(1,3-dimethyl-5-phenoxy-1H-pyrazole-4-yl)methylene]amino]oxy]methyl]benzoate), and tebufenpyrad (4-chloro-N[[4-1,1-dimethylethyl]phenyl]methyl]-3-ethyl-1-methyl-1H-pyrazole-5-carboxamide);
- f) a phenyl pyrazole selected from the group consisting of fipronil (5-amino-[2,6-dichloro-4-(trifluoromethyl)phenyl]-4-[(1R,S)-(trifluoromethyl)sulfinyl]-1H-pyrazole-3-carbonitrile); diacylhydrazines including halofenozide (4-chlorobenzoate-2-benzoyl-2-(1,1-dimethylethyl)-hydrazide), methoxyfenozide (RH-2485, N-tert-butyl-N'-(3-methoxy-o-toluoyl)-3,5-xylohydrazide), and tebufenozide (3,5-dimethylbenzoic acid 1-(1,1-dimethylethyl)-2-(4-ethylbenzoyl) hydrazide);
- g) a triazole selected from the group consisting of amitrole and triazamate;

- h) a biological/fermentation products selected from the group consisting of avermectin (abamectin) and spinosad (XDE-105);
  - i) an organophosphate insecticide selected from the group consisting of acephate, chlorpyrifos, chlorpyrifos-methyl, diazinon, fenamiphos, and malathion; and
  - j) a carbamate insecticide selected from the group consisting of aldicarb, carbaryl, carbofuran, oxamyl, and thiodicarb.
13. A seed blend comprising refuge seeds and at least one variety of transgenic crop seeds for use in planting in a field, wherein said seed blend comprises a refuge seed and a first transgenic crop seed comprising a first transgene in a uniform mixture; wherein said mixture consists of from about 100% to about 50% first transgenic crop seed, and wherein said refuge seed is selected from the group consisting of a non-transgenic seed and a second transgenic seed comprising a second transgene that is different from the first transgene.
14. The seed blend of claim 13 wherein said second transgene is selected from the group consisting of an insecticidal transgene, a fungicidal transgene, a herbicidal transgene, a nematocidal transgene, a bactericidal transgene, and an acaricidal transgene.
15. The seed blend of claim 14 wherein said mixture further comprises a composition selected from the group consisting of
- a) said first transgenic crop seed lacking a seed treatment; and
  - b) said first transgenic crop seed treated with a seed treatment.
16. The seed blend of claim 14 wherein said mixture further comprises a composition selected from the group consisting of
- a) said refuge seed lacking a seed treatment; and
  - b) said refuge seed treated with a seed treatment.
17. The seed blend of claim 15 wherein said seed treatment comprises a pesticidal agent selected from the group consisting of insecticides, acaricides, nematocides, fungicides, bactericides, and herbicides.

18. The seed blend of claim 16 wherein said seed treatment comprises a pesticidal agent selected from the group consisting of insecticides, acaricides, nematocides, fungicides, bactericides, and herbicides.
19. The seed blend of claim 17 wherein said pesticidal agent is an insecticide selected from the group consisting of a recombinant acyl lipid hydrolase protein, a *Bacillus sphearicus* insecticidal protein, *Bacillus laterosporous* insecticidal protein, a insecticidal protein derived from a *Xenorhabdus* bacteria species, a insecticidal protein derived from a *Photorhabdus* bacteria species, a *Bacillus thuringiensis* insecticidal  $\delta$ -endotoxin protein or vegetative insecticidal protein (VIP), and an insecticidal sRNAi molecule.
20. The seed blend of claim 17 wherein said pesticidal agent is selected from the group consisting of pyrethrins and synthetic pyrethroids, oxadizine derivatives, chloronicotinyls, nitroguanidine derivatives, triazoles, organophosphates, pyrrols, pyrazoles, phenyl pyrazoles, diacylhydrazines, biological/fermentation products, and carbamates.
21. The seed blend of claim 20 wherein said pesticidal agent is:
  - a) a pyrethrin selected from the group consisting of 2-allyl-4-hydroxy-3-methyl-2-cyclopenten-1-one ester of 2,2-dimethyl-3-(2methyl propenyl)-cyclopropane carboxylic acid, and/or (2-methyl-1-propenyl)-2-methoxy-4-oxo-3-(2 propenyl)-2-cyclopenten-1-yl ester and mixtures of cis and trans isomers thereof;
  - b) a synthetic pyrethroid selected from the group consisting of (s)-cyano(3-phenoxyphenyl)methyl 4-chloro alpha (1-methylethyl)benzeneacetate (fenvalerate), (S)-cyano (3-phenoxyphenyl) methyl (S)-4-chloro-alpha-(1-methylethyl) benzeneacetate (esfenvalerate), (3-phenoxyphenyl)-methyl(+)cis-trans-3-(2,2-dichloroethenyl)-2,2-dimethylcyclopropanecarboxylate (permethrin), ( $\pm$ ) alpha-cyano-(3-phenoxyphenyl) methyl(+)cis,trans-3-(2,2-dichloroethenyl)-2,2-dimethyl-cyclopropane carboxylate (cypermethrin), beta-cypermethrin, theta cypermethrin, S-cyano (3-phenoxyphenyl) methyl ( $\pm$ ) cis/trans 3-(2,2-dichloroethenyl) 2,2 dimethylcyclopropane carboxylate (zeta-cypermethrin), (s)-alpha-cyano-3-phenoxybenzyl (IR,3R)-3-(2,2-dibromovinyl)-2,2-dimethyl cyclopropanecarboxylate (deltamethrin), alpha-cyano-3-phenoxybenzyl 2,2,3,3-tetramethyl cyclopropoanecarboxylate (fenpropathrin), (RS)-alpha-cyano-3-phenoxybenzyl(R)-2-[2-chloro-4-(trifluoromethyl)anilino]-3-methylbutanoate (tau-fluvalinate), (2,3,5,6-tetrafluoro-4-methylphenyl)-methyl-(1 alpha, 3 alpha)-(Z)-( $\pm$ )-3-(2-



chloro-3,3,3-trifluoro-1-propenyl)-2,2-dimethylcyclopropanecarboxylate (tefluthrin), ( $\pm$ )-cyano (3-phenoxyphenyl) methyl ( $\pm$ )-4-(difluoromethoxy)-alpha-(1-methyl ethyl) benzeneacetate (flucythrinate), cyano(4-fluoro-3-phenoxyphenyl)methyl 3-[2-chloro-2-(4-chlorophenyl)ethenyl]-2,2-dimethylcyclopropanecarboxylate (flumethrin), cyano(4-fluoro-3-phenoxyphenyl) methyl 3-(2,2-dichloroethenyl)-2,2-dimethylcyclopropanecarboxylate (cyfluthrin), beta cyfluthrin, transfluthrin, (S)-alpha-cyano-3-phenoxybenzyl(Z)-(IR-cis)-2,2-dimethyl-3-[2-(2,2,2-trifluoro-trifluoromethylethoxycarbonyl)vinyl]cyclopropane carboxylate (acrinathrin), (IR cis) S and (IS cis) R enantiomer isomer pair of alpha-cyano-3-phenoxybenzyl-3-(2,2-dichlorovinyl)-2,2-dimethylcyclopropane carboxylate (alpha-cypermethrin), [IR,3S)3(1'RS)(1',2',2',2'-tetrabromoethyl)]-2,2-dimethyl cyclopropanecarboxylic acid (s)-alpha-cyano-3-phenoxybenzyl ester (tralomethrin), cyano-(3-phenoxyphenyl) methyl 2,2-dichloro-1-(4-ethoxyphenyl)cyclopropane carboxylate (cycloprothrin), [1 $\alpha$ , 3 $\alpha$ (Z)]-( $\pm$ )-cyano-(3-phenoxyphenyl)methyl 3-(2-chloro-3,3,3-trifluoro-1-propenyl)-2,2-dimethylcyclopropanecarboxylate (cyhalothrin), [1 alpha (s), 3 alpha(z)]-cyano(3-phenoxyphenyl) methyl-3-(2-chloro-3,3,3-trifluoro-1-propenyl)-2,2-dimethylcyclopropane carboxylate (lambda cyhalothrin), (2-methyl [1,1'-biphenyl]-3-yl) methyl 3-(2-chloro-3,3,3-trifluoro-1-propenyl)-2,2-dimethyl-cyclopropanecarboxylate (bifenthrin), 5-1-benzyl-3-furymethyl-d-cis(1R,3S,E)2,2-dimethyl-3-(2-oxo,-2,2,4,5-tetrahydro thiophenylidenemethyl)cyclopropane carboxylate (kadethrin), [5-(phenylmethyl)-3-furanyl]-3-furanyl 2,2-dimethyl-3-(2-methyl-1-propenyl) cyclopropane carboxylate (resmethrin). (1R-trans)-[5-(phenylmethyl)-3-furanyl]methyl 2,2-dimethyl-3-(2-methyl-1-propenyl)cyclopropanecarboxylate (bioresmethrin), 3,4,5,6-tetra hydro-phthalimidomethyl-(IRS)-cis-trans-chrysanthemate (tetramethrin), 3-phenoxybenzyl-d,l-cis,trans 2,2-dimethyl-3-(2-methylpropenyl) cyclopropane carboxylate (phenothrin), empenethrin, cyphenothrin, prallethrin, imiprothrin, (RS)-3-allyl-2-methyl-4-oxocyclopent-2-enyl-(1A,3R; 1R,3S)-2,2-dimethyl-3-(2-methylprop-1-enyl) cyclopropane carboxylate (allethrin), bioallethrin, and ZXI8901;

- c) an oxadiazine derivative selected from the group consisting of 5-(2-chloropyrid-5-ylmethyl)-3-methyl-4-nitroiminoperhydro-1,3,5-oxadiazine, 5-(2-chlorothiazol-5-ylmethyl)-3-methyl-4-nitroiminoperhydro-1,3,5-oxadiazine, 3-methyl-4-nitroimino-5-(1-oxido-3-pyridinomethyl) perhydro-1,3,5-oxadiazine, 5-(2-chloro-1-oxido-5-pyridiniomethyl)-3-methyl-4-nitroiminoperhydro-1,3,5-oxidiazine, 3-methyl-5-(2-methylpyrid-5-ylmethyl)-4-nitroiminoperhydro-1,3,5-oxadiazine, and thiamethoxam;

- d) a chloronicotinyl insecticide selected from the group consisting of acetamiprid ((E)-N-[(6-chloro-3-pyridinyl)methyl]-N'-cyano-N-methyleneimidamide), imidacloprid (1-[(6-chloro-3-pyridinyl)methyl]-N-nitro-2-imidazolidinimine), and nitenpyram (N-[(6-chloro-3-pyridinyl)methyl]-N-ethyl-N'-methyl-2-nitro-1,1-ethenediamine);
  - e) a nitroguanidine insecticide selected from the group consisting of pyrroles: pyrazoles chlorfenapyr (4-bromo-2-(4-chlorophenyl)-1-ethoxymethyl-5-trifluoromethylpyrrole-3-carbonitrile), fenpyroximate ((E)-1,1-dimethylethyl-4[[[(1,3-dimethyl-5-phenoxy-1H-pyrazole-4-yl)methylene]amino]oxy]methyl]benzoate), and tebufenpyrad (4-chloro-N[[4-(1,1-dimethylethyl)phenyl]methyl]-3-ethyl-1-methyl-1H-pyrazole-5-carboxamide);
  - f) a phenyl pyrazole selected from the group consisting of fipronil (5-amino-[2,6-dichloro-4-(trifluoromethyl)phenyl]-4-[(1R,S)-(trifluoromethyl)sulfinyl]-1H-pyrazole-3-carbonitrile); diacylhydrazines including halofenozide (4-chlorobenzoate-2-benzoyl-2-(1,1-dimethylethyl)-hydrazide), methoxyfenozide (RH-2485, N-tert-butyl-N'-(3-methoxy-o-toluoyl)-3,5-xylohydrazide), and tebufenozide (3,5-dimethylbenzoic acid 1-(1,1-dimethylethyl)-2-(4-ethylbenzoyl) hydrazide);
  - g) a triazole selected from the group consisting of amitrole and triazamate;
  - h) a biological/fermentation products selected from the group consisting of avermectin (abamectin) and spinosad (XDE-105);
  - i) an organophosphate insecticide selected from the group consisting of acephate, chlorpyrifos, chlorpyrifos-methyl, diazinon, fenamiphos, and malathion; and
  - j) a carbamate insecticide selected from the group consisting of aldicarb, carbaryl, carbofuran, oxamyl, and thiodicarb.
22. The seed blend of claim 18 wherein said pesticidal agent is an insecticide selected from the group consisting of a recombinant acyl lipid hydrolase protein, a *Bacillus sphearicus* insecticidal protein, *Bacillus laterosporous* insecticidal protein, a insecticidal protein derived from a *Xenorhabdus* bacteria species, a insecticidal protein derived from a *Photorhabdus* bacteria species, a *Bacillus thuringiensis* insecticidal  $\delta$ -endotoxin protein or vegetative insecticidal protein (VIP), and an insecticidal sRNAi molecule.
23. The seed blend of claim 18 wherein said pesticidal agent is selected from the group consisting of pyrethrins and synthetic pyrethroids, oxadizine derivatives, chloronicotinylns, nitroguanidine derivatives, triazoles, organophosphates, pyrrols, pyrazoles, phenyl pyrazoles, diacylhydrazines, biological/fermentation products, and carbamates.

24. The seed blend of claim 23 wherein said pesticidal agent is:

- a) a pyrethrin selected from the group consisting of 2-allyl-4-hydroxy-3-methyl-2-cyclopenten-1-one ester of 2,2-dimethyl-3-(2methyl propenyl)-cyclopropane carboxylic acid, and/or (2-methyl-1-propenyl)-2-methoxy-4-oxo-3-(2 propenyl)-2-cyclopenten-1-yl ester and mixtures of cis and trans isomers thereof;
- b) a synthetic pyrethroid selected from the group consisting of (s)-cyano(3-phenoxyphenyl)methyl 4-chloro alpha (1-methylethyl)benzeneacetate (fenvalerate), (S)-cyano (3-phenoxyphenyl) methyl (S)-4-chloro-alpha-(1-methylethyl) benzeneacetate (esfenvalerate), (3-phenoxyphenyl)-methyl(+)cis-trans-3-(2,2-dichloroethenyl)-2,2-dimethylcyclopropanecarboxylate (permethrin), ( $\pm$ ) alpha-cyano-(3-phenoxyphenyl) methyl(+)-cis,trans-3-(2,2-dichloroethenyl)-2,2-dimethyl-cyclopropane carboxylate (cypermethrin), beta-cypermethrin, theta cypermethrin, S-cyano (3-phenoxyphenyl) methyl ( $\pm$ ) cis/trans 3-(2,2-dichloroethenyl) 2,2 dimethylcyclopropane carboxylate (zeta-cypermethrin), (s)-alpha-cyano-3-phenoxybenzyl (1R,3R)-3-(2,2-dibromovinyl)-2,2-dimethyl cyclopropanecarboxylate (deltamethrin), alpha-cyano-3-phenoxybenzyl 2,2,3,3,-tetramethyl cyclopropopane carboxylate (fenpropathrin), (RS)-alpha-cyano-3-phenoxybenzyl(R)-2-[2-chloro-4-(trifluoromethyl)anilino]-3-methylbutanoate (tau-fluvalinate), (2,3,5,6-tetrafluoro-4-methylphenyl)-methyl-(1 alpha, 3 alpha)-(Z)-( $\pm$ )-3-(2-chloro-3,3,3-trifluoro-1-propenyl)-2,2-dimethylcyclopropanecarboxylate (tefluthrin), ( $\pm$ )-cyano (3-phenoxyphenyl) methyl ( $\pm$ )-4-(difluoromethoxy)-alpha-(1-methyl ethyl) benzeneacetate (flucythrinate), cyano(4-fluoro-3-phenoxyphenyl)methyl 3-[2-chloro-2-(4-chlorophenyl)ethenyl]-2,2-dimethylcyclopropanecarboxylate (flumethrin), cyano(4-fluoro-3-phenoxyphenyl) methyl 3-(2,2-dichloroethenyl)-2,2-dimethyl-cyclopropanecarboxylate (cyfluthrin), beta cyfluthrin, transfluthrin, (S)-alpha-cyano-3-phenoxybenzyl(Z)-(1R-cis)-2,2-dimethyl-3-[2-(2,2,2-trifluoro-trifluoromethyl-ethoxycarbonyl)vinyl]cyclopropane carboxylate (acrinathrin), (1R cis) S and (1S cis) R enantiomer isomer pair of alpha-cyano-3-phenoxybenzyl-3-(2,2dichlorovinyl)-2,2-dimethylcyclopropane carboxylate (alpha-cypermethrin), [1R,3S)3(1'RS)(1',2',2',2'-tetrabromoethyl)]-2,2-dimethyl cyclopropanecarboxylic acid (s)-alpha-cyano-3-phenoxybenzyl ester (tralomethrin), cyano-(3-phenoxyphenyl) methyl 2,2-dichloro-1-(4-ethoxyphenyl)cyclopropane carboxylate (cycloprothrin), [1 $\alpha$ , 3 $\alpha$ (Z)]-( $\pm$ )-cyano-(3-phenoxyphenyl)methyl 3-(2-chloro-3,3,3-trifluoro-1-propenyl)-2,2-cimethylcyclopropanecarboxylate (cyhalothrin), [1 alpha (s), 3 alpha(z)]-cyano(3-

phenoxyphenyl) methyl-3-(2-chloro-3,3,3-trifluoro-1-propenyl)-2,2-dimethylcyclopropane carboxylate (lambda cyhalothrin), (2-methyl [1,1'-biphenyl]-3-yl) methyl 3-(2-chloro-3,3,3-trifluoro-1-propenyl)-2,2-dimethyl-cyclopropanecarboxylate (bifenthrin), 5-1-benzyl-3-furylmethyl-d-cis(1R,3S,E)2,2-dimethyl-3-(2-oxo,-2,2,4,5 tetrahydro thiophenylidenemethyl)cyclopropane carboxylate (kadethrin), [5-(phenyl methyl)-3-furanyl]-3-furanyl 2,2-dimethyl-3-(2-methyl-1-propenyl) cyclopropane carboxylate (resmethrin). (1R-trans)-[5-(phenylmethyl)-3-furanyl]methyl 2,2-dimethyl-3-(2-methyl-1-propenyl)cyclopropanecarboxylate (bioresmethrin), 3,4,5,6-tetra hydro-phthalimidomethyl-(1R)-cis-trans-chrysanthemate (tetramethrin), 3-phenoxybenzyl-d,l-cis,trans 2,2-dimethyl-3-(2-methylpropenyl) cyclopropane carboxylate (phenothrin), empenethrin, cyphenothrin, prallethrin, imiprothrin, (RS)-3-allyl-2-methyl-4-oxocyclopent-2-enyl-(1A,3R; 1R,3S)-2,2-dimethyl-3-(2-methylprop-1-enyl) cyclopropane carboxylate (allethrin), bioallethrin, and ZXI8901;

- c) an oxadiazine derivative selected from the group consisting of 5-(2-chloropyrid-5-ylmethyl)-3-methyl-4-nitroiminoperhydro-1,3,5-oxadiazine, 5-(2-chlorothiazol-5-ylmethyl)-3-methyl-4-nitroiminoperhydro-1,3,5-oxadiazine, 3-methyl-4-nitroimino-5-(1-oxido-3-pyridinylmethyl) perhydro-1,3,5-oxadiazine, 5-(2-chloro-1-oxido-5-pyridinylmethyl)-3-methyl-4-nitroiminoperhydro-1,3,5-oxadiazine, 3-methyl-5-(2-methylpyrid-5-ylmethyl)-4-nitroiminoperhydro-1,3,5-oxadiazine, and thiamethoxam;
- d) a chloronicotinyl insecticide selected from the group consisting of acetamiprid ((E)-N-[(6-chloro-3-pyridinyl)methyl]-N'-cyano-N-methyleneimidamide), imidacloprid (1-[(6-chloro-3-pyridinyl)methyl]-N-nitro-2-imidazolidinimide), and nitenpyram (N-[(6-chloro-3-pyridinyl)methyl]-N-ethyl-N'-methyl-2-nitro-1,1-ethenediamine);
- e) a nitroguanidine insecticide selected from the group consisting of pyrroles: pyrazoles chlorfenapyr (4-bromo-2-(4-chlorophenyl)-1-ethoxymethyl-5-trifluoromethylpyrrole-3-carbonitrile), fenpyroximate ((E)-1,1-dimethylethyl-4-[[[(1,3-dimethyl-5-phenoxy-1H-pyrazole-4-yl)methylene]amino]oxy]methyl]benzoate), and tebufenpyrad (4-chloro-N[[4-1,1-dimethylethyl]phenyl]methyl]-3-ethyl-1-methyl-1H-pyrazole-5-carboxamide);
- f) a phenyl pyrazole selected from the group consisting of fipronil (5-amino-[2,6-dichloro-4-(trifluoromethyl)phenyl]-4-[(1R,S)-(trifluoromethyl)sulfinyl]-1H-pyrazole-3-carbonitrile); diacylhydrazines including halofenozide (4-chlorobenzoate-2-benzoyl-2-(1,1-dimethylethyl)-hydrazide), methoxyfenozide (RH-2485, N-tert-butyl-N'-(3-methoxy-o-toluoyl)-3,5-xylohydrazide), and tebufenozide (3,5-dimethylbenzoic acid 1-(1,1-dimethylethyl)-2-(4-ethylbenzoyl) hydrazide);

- g) a triazole selected from the group consisting of amitrole and triazamate;
- h) a biological/fermentation products selected from the group consisting of avermectin (abamectin) and spinosad (XDE-105);
- i) an organophosphate insecticide selected from the group consisting of acephate, chlorpyrifos, chlorpyrifos-methyl, diazinon, fenamiphos, and malathion; and
- j) a carbamate insecticide selected from the group consisting of aldicarb, carbaryl, carbofuran, oxamyl, and thiodicarb.